DE/AFS/SF

MSE **Millennium Science & Engineering, Inc.**

1605 N. 13th Street
Boise, Idaho 83702
Phone: 208.345.8292
Fax: 208.344.8007

October 22, 2007

Mr. William Rogers
Air Quality and Permits Manager
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, Idaho 83706

RE: Pre-Permit Construction Approval and Permit to Construct Application, Idaho Milk Products, Inc., Jerome, Idaho

Dear Mr. Rogers:

Please find enclosed one copy of the Pre-Permit Construction Approval and Permit to Construct Application for the Idaho Milk Products Plant in Jerome, Idaho. Electronic copies of application forms, report (without attachments), and modeling input and output files are included on a compact disc (see Appendix 4). A check to pay the Permit to Construction application fees is also enclosed.

Thank you for your assistance with this project. If you have any questions please call me at (208) 345-8292.

Regards,

Troy D. Riecke, P.E.
Environmental Engineer

Cc: Mr. Tom Myers – Idaho Milk Products, Inc.
Mr. Aaron Baker – Bid-D Construction

DE/AFS/SF

October 22, 2007

Mr. William Rogers
Air Quality and Permits Manager
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706

Re: Application for Pre-Permit Construction, Idaho Milk Products, Inc., Milk Processing Plant, Jerome, Idaho

Dear Mr. Rogers:

Idaho Milk Products, Inc. (IMP) proposes to construct a milk processing plant in Jerome, Idaho. IMP intends to begin construction of the plant within 15 days of submittal of this application. Therefore, we request permission for Pre-Permit Construction in accordance with Part 213 of Idaho Rules for the Control of Air Pollution (IDAPA 58.01.01.213). The enclosed PTC application conforms to the January 2001 Idaho Department of Environmental Quality (DEQ) *Pre-Permit Construction Approval Guidance Document*.

The required pre-application meeting was held on October 16, 2007 and was attend by you, Mr. Morrie Lewis (DEQ), Mr. Darrin Mehr (DEQ), Mr. Tom Myers (IMP), Mr. Aaron Baker (Big-D), Mr. Jared Potts (MSE), and Mr. Troy Riecke (MSE). The required public information meeting will be held on October 25, 2007. A copy of the notice announcing this meeting is enclosed with this PTC application.

We have determined that construction of our facility is eligible for Pre-Permit Construction in that our Jerome plant is not a major facility or a major modification, we are not proposing to use offsets or netting, and emissions from our facility are not going to impact air quality related values in a Class I area.

By this application, IMP certifies that we will comply with all limitations, operating requirements, monitoring requirements, and reporting requirements described in the enclosed application. Also, pursuant to Idaho Rules (IDAPA 58.01.01.123), I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

We appreciate your assistance in moving this project forward on such short notice. Please feel free to call Mr. Aaron Baker at (801)381-5850, Mr. Troy Riecke at (208)345-8292, or myself at (805)341-1214 if you have any questions.

Sincerely,

Tom Myers
President

Idaho Milk Products, Inc.
165 South 100 East
Jerome, ID 83338

cc: Troy Riecke – Millennium Science & Engineering, Inc.

DE/AFS/SF

Pre-Permit Construction Approval and Permit to Construct Application

Idaho Milk Products
Milk Processing Facility
Jerome, Idaho

October 22, 2007

RECEIVED
OCT 23 2007
Department of Environmental Quality
State Air Program

Prepared for:

Idaho Milk Products, Inc.
165 South 100 East
Jerome, Idaho 83338

Prepared by:
Millennium Science & Engineering, Inc.
1605 North 13th Street
Boise, Idaho 83702
(208)345-8292

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Appendix 1 Emission Calculations and Vendor Supplied Equipment Information
Appendix 2 Copy of Public Meeting Notice
Appendix 3 Modeling Protocol and IDEQ Response
Appendix 4 Model Output and Electronic Copy of Model Input/Output
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Section 1 – Process Description

1.0 Introduction

Idaho Milk Products, Inc. (IMP) proposes to construct a milk processing plant at a site located at 165 South 100 East in Jerome, Idaho. The plant will receive up to 3 million pounds per day (lb/day) of raw milk by tanker truck. Milk will be processed in two natural gas fired dryers to prepare dry products from milk. Air blown through the dryers will flow through multiple particulate capturing devices (including: cyclones, baghouses, and/or a scrubber) to recover product powder and reduce particulate emissions. Dried products from the dryers will pass through a fluid-bed, then to packaging. There will be two boilers at the facility that will combust natural gas to produce steam for heat processes at the plant. An emergency generator will supply backup bower in the case of an interruption in the main power supply. See the Figure 1 – Process Flow Diagram MPC and Skim Products and Figure 2 – Process Flow Diagram Permeate Products (Section 2) for a graphical depiction of the processes to be incorporated into the operations at the milk processing plant. The following discussion provides further details regarding the proposed milk processing operations.

1.1 Process Description

Unloading

Up to 3 million pounds per day of raw dairy milk will be unloaded from tanker trucks at the plant. There are no point source air emissions identified for this process operation.

Skimming/Separation/Pasteurization

Raw milk will be heated then separated into skim milk and sweet cream. The skim milk will be pasteurized and cooled then sent to storage. The sweet cream will be pasteurized and cooled then sent to storage to await loadout. There are no point source air emissions identified for this process operation.

Skim Component Processing

The Skim component is pumped to the Ultra-filtration Membrane (UF) unit which separates the (a) protein fraction of the milk from the (b) lactose / ash fraction. This step also incorporates water into the process to dilute the protein fraction and re-filter it (Dia-filtration) to flush more lactose and ash away from the protein resulting in a higher concentration of protein.

(a) The protein fraction (MPC) is then pumped to holding tanks to await further processing.

(b) The lactose / ash fraction (permeate) is pumped to the balance tank of the Reverse Osmosis (RO) system. The RO system concentrates the lactose and ash by removing water only. The water is pumped to the "Polisher" balance tank while the permeate is pumped to the balance tank of the permeate evaporator for further concentration.

The MPC is pumped to the Ultra-Osmosis (UO) unit, another membrane unit that removes water as well as ash from the protein fraction, further concentrating the MPC for optimal drying. The MPC is heated to approx 130 degrees F. prior to entering the UO. The UO Concentrate is then pumped to the balance tank of the MPC dryer. The permeate fraction of the UO process is pumped back to the RO system to recover water and permeate solids.

Skim / MPC Dry Product Process

The concentrated skim or MPC is pumped from the dryer balance tank, through a strainer, and is pumped into the main dryer body (P101), using a high pressure pump. Air used in drying, passes over a Maxon Cross-Fire natural gas fired burner and enters the dryer through the top of the main chamber. Air is exhausted through four ports to four cyclone collectors. Powder collected in the cyclones will be conveyed to the fluid-bed. Air from the cyclones will exhaust into two baghouse collectors (P101A and P101B). Powder collected in the dryer baghouses will also be conveyed to the fluid-bed. Air from the fluid-bed will exhaust into a baghouse (P102) and powder collected in this baghouse will be conveyed to the fluid-bed. Exhaust from the fluid-bed baghouse will discharge to the atmosphere. The powder product will be conveyed to a sifter and then to storage silos.

Permeate Dry Product Process

Concentrated permeate is received into the evaporator balance tank from the RO unit. Permeate is then heated and pasteurized prior to entering he evaporator. The evaporator is a multi-pass Mechanical Vapor Recompression (MVR) unit with a Thermal Vapor Recompression (TVR) finisher. Upon exiting the finisher, the concentrated permeate passes through a "flash cooler" where the temperature is lowered for delivery to one of four crystallizer tanks. The concentrated permeate is slowly cooled in the crystallizer. The process allows the lactose in the concentrate to form crystals and bind the ash to allow a more "fluid" product that will dry easier.

The crystallized permeate is pumped from a crystallizer tank and is preheated. The heated concentrate is then strained and pumped into the main body of the dryer using a high pressure pump. The dried permeate will discharge onto a lactose conversion belt and fluid bed re-dryer / cooler. The powder will be conveyed pneumatically to a sifter and then on to one of two permeate storage silos. The powder receiving area will have one baghouse (P105) with exhaust that will discharge to the atmosphere.

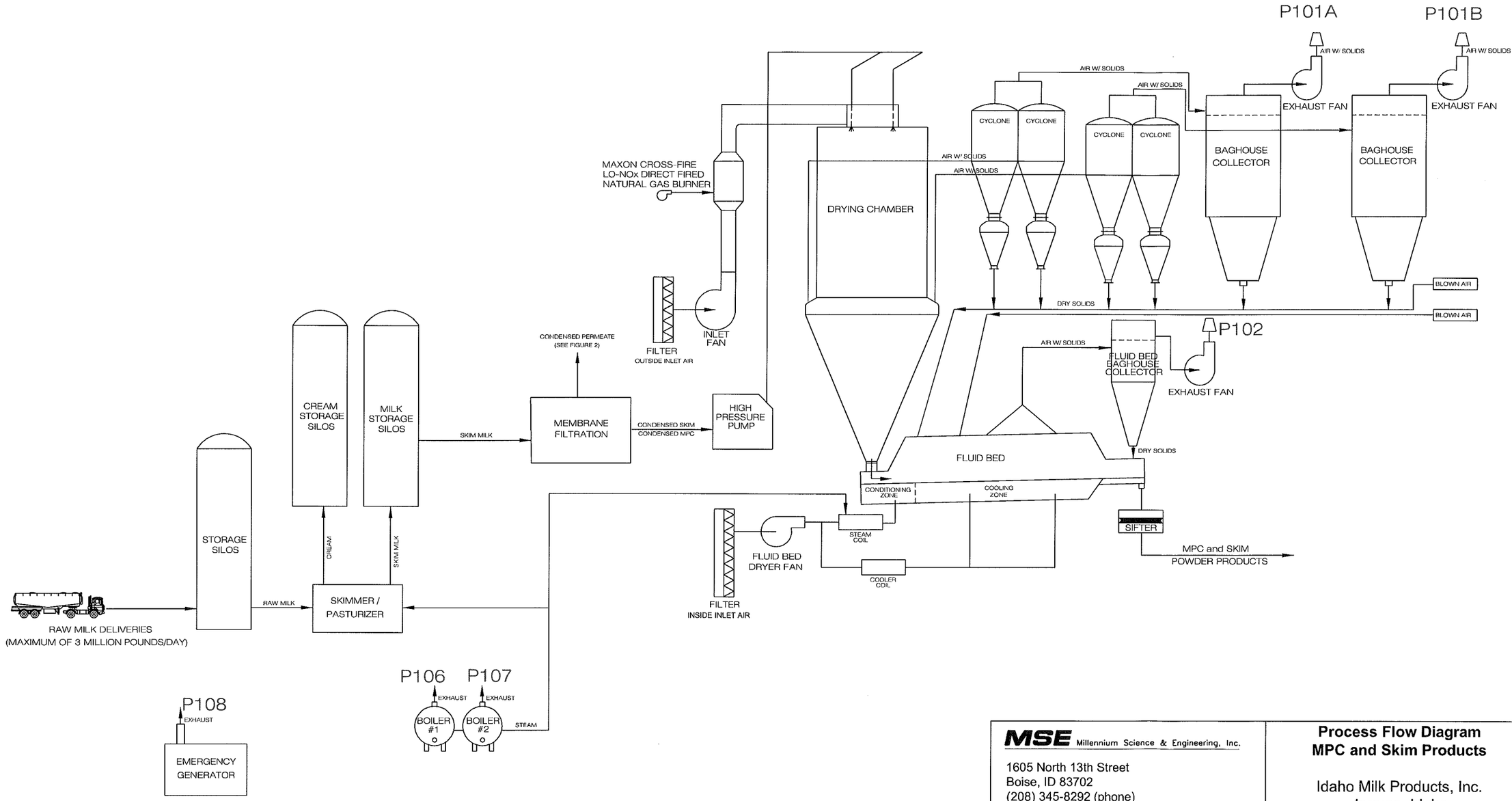
Air used in drying, passes over a Maxon Cross-Fire natural gas fired burner and enters the dryer through the top of the main chamber. Air is exhausted through two ports to two cyclone collectors. Powder from the cyclones drops to a fluid-bed, while the air then enters a sanitary scrubber (P103) prior to discharge to the atmosphere. Powder collected in the fluid-bed baghouse will be conveyed back to the fluid-bed and the exhaust from the fluid-bed baghouse (P104) will discharge to the atmosphere

Packaging
Powder will be conveyed from one of four silos to either a bag filler or to a tote filler. The powder silos are equipped with a baghouse filtering system and the air used in conveying is discharged back into the plant environment.

Utilities
Two natural gas boilers (P106 and P107) will provide steam for a variety of heat processes at the facility. The boilers are sized to be fully redundant.

An emergency generator (P108) will provide backup power in the event of a power outage. The generator engine will combust diesel fuel.

Section 2 – Process Flow Diagram



MSE Millennium Science & Engineering, Inc.

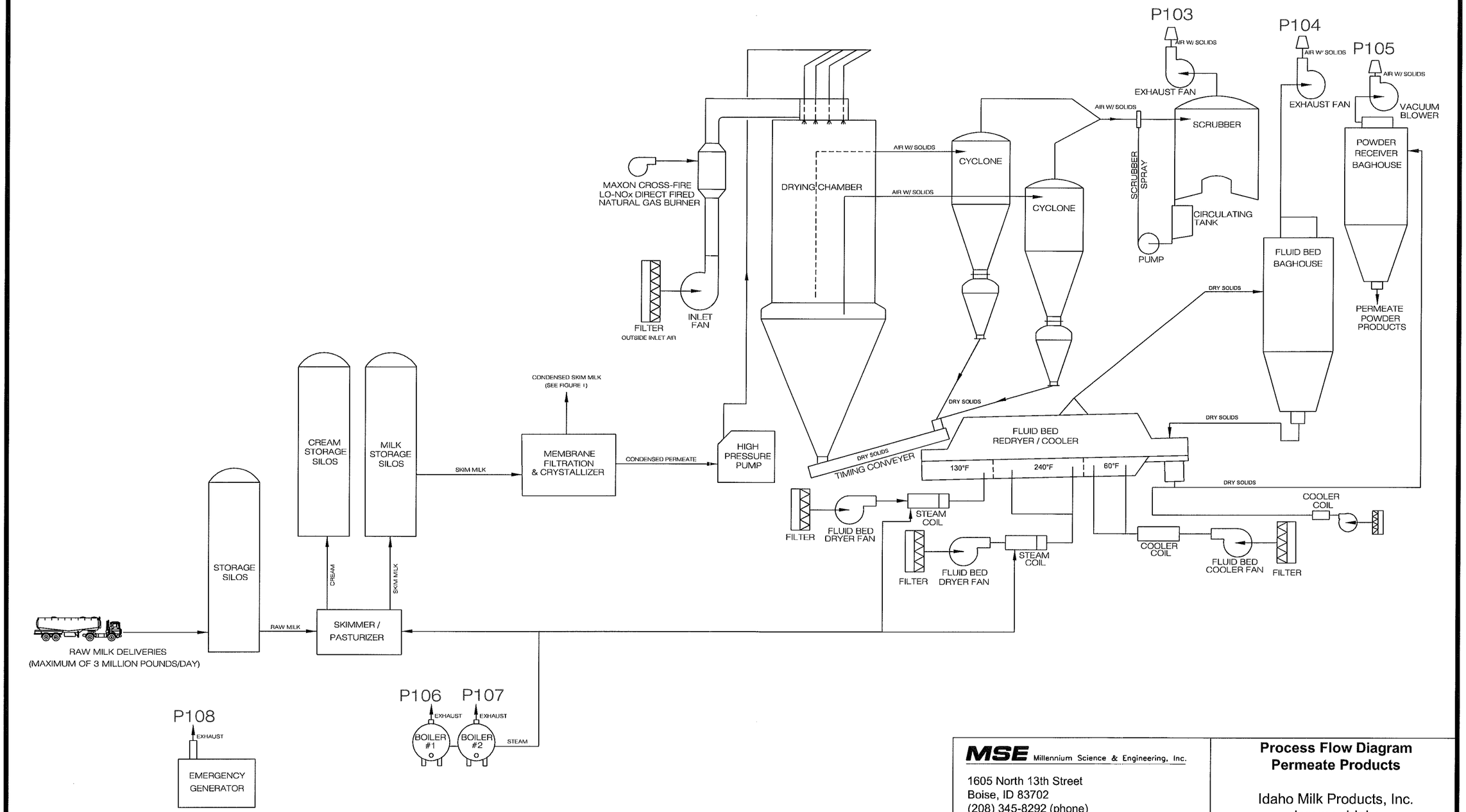
1605 North 13th Street
Boise, ID 83702
(208) 345-8292 (phone)
(208) 344-8007 (fax)

Process Flow Diagram
MPC and Skim Products

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 1



MSE Millennium Science & Engineering, Inc.
1605 North 13th Street
Boise, ID 83702
(208) 345-8292 (phone)
(208) 344-8007 (fax)

Process Flow Diagram
Permeate Products

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 2

Section 3 – Applicable Requirements

3.0 Applicable Requirements

Regulations applicable to the proposed facility are discussed in this section.

3.1 Federal Requirements

The following includes the rules and regulations reviewed in preparation of this PTC application.

3.1.1 40 CFR § 52 - Prevention of Significant Deterioration (PSD)

The facility is not a PSD major facility and does not belong to any designated source category, therefore PSD review is not applicable.

3.1.2 40 CFR § 60 - New Source Performance Standards (NSPS)

40 CFR § 60-Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Affected Units:
1.) Boiler #1 (P106)
2.) Boiler #2 (P107)

60.40c – Applicability
The boilers are subject to requirements of Subpart Dc because the boilers are steam generating units with heat input capacity greater than 10 million BTU/hr but less than 100 million BTU/hr and will be constructed or modified after June 9, 1989.

Because the boilers will only combust natural gas, the facility will only be subject to the reporting and record keeping requirements listed in § 60.48c.

§ 60.48c Reporting and recordkeeping requirements.
The following information is required to be submitted:

(a) Notification of the date of construction or reconstruction and actual startup. Provide heat input capacity of the facility and the identification of fuels to be combusted in the affected facility.

The following information is required to be recorded and maintained:
(g)(2) Record and maintain records of the amount of each fuel combusted during each calendar month.

Records required under this section are to be maintained by the operator for two years.

The reporting period for the reports required under this subpart is each six-month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.

40 CFR § 60-Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Affected Units:
1.) Emergency Generator (P108)

60.4200 – Am I subject to this subpart?
The emergency generator is subject to this part because it is a compression ignition internal combustion engine with a displacement less than 30 liters per cylinder that will be constructed on or after 2007.

The IMP facility will be classified as an area source and therefore the generator will be exempt from the obligation to obtain a permit under 40 CFR part 70 or part 71.

60.4205 – What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?
Must comply with requirements listed in 40 CFR 89.112 and 40 CFR 89.113.

60.4207 – What fuel requirements must I meet if I am an owner of a stationary CI internal combustion engine subject to this part?
Specific fuel requirements are listed in 40 CFR 80.510(a) and 80.510(b).

60.4209 – What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?
Must install a non-resettable hour meter prior to startup of the engine.

60.4211 – What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?
Maintenance checks and readiness testing of the unit is limited to 100 hours per year. There is no time limit on operation of the unit in emergency situations. Any operation other than emergency operation, and maintenance and testing is not allowed.

60.4214 – What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?
If the emergency generator does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

3.1.3 40 CFR § 61 - National Emission Standards for Hazardous Air Pollutants (NESHAPs) & Maximum Achievable Control Technology (MACT)

There are no applicable NESHAPs or MACT for this facility.

3.2 State Requirements

Applicable state requirements include the following. All citations refer to specific sections of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho.

123. CERTIFICATION OF DOCUMENTS.

All documents, including but not limited to, application forms for permits to construct, application forms for operating permits, progress reports, records, monitoring data, supporting information, testing reports or compliance certifications submitted to the Department shall contain a certification by a responsible official.

128. CONFIDENTIAL INFORMATION

Not applicable as no confidential information is being submitted.

201 - PERMIT TO CONSTRUCT REQUIRED

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Skim Fluid-Bed (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed (P104)
5.) Permeate Powder Receiver (P105)
6.) Boiler #1 (P106)
7.) Boiler #2 (P107)
8.) Emergency Generator (P108)

The proposed facility is a new synthetic minor source, a PTC is required.

203. PERMIT REQUIREMENTS FOR NEW AND MODIFIED STATIONARY SOURCES

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Skim Fluid-Bed (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed (P104)
5.) Permeate Powder Receiver (P105)
6.) Boiler #1 (P106)

7.) Boiler #2 (P107)
8.) Emergency Generator (P108)

With the exception of the baghouses and scrubber that are required to control particulate matter emissions and operation limitations of 500 hours per year for the emergency generator, no other limits or controls are required. The facility anticipates that the IDEQ will require permit conditions for the plant to protect the National Ambient Air Quality Standards (NAAQS), to comply with the toxic air pollutant (TAP) standards, to comply with the grain loading standard for fuel burning equipment, and the reasonable control of fugitives.

210. DEMONSTRATION OF PRECONSTRUCTION COMPLIANCE WITH TOXIC STANDARDS

210.01. Identification of Toxic Air Pollutants.

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Permeate Dryer (P103)
3.) Boiler #1 (P106)
4.) Boiler #2 (P107)
5.) Emergency Generator (P108)

All TAP emitted by these emission units shall be identified. These compounds are listed in Section 4.

210.02. Quantification of Emission Rates

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Permeate Dryer (P103)
3.) Boiler #1 (P106)
4.) Boiler #2 (P107)
5.) Emergency Generator (P108)

Emission rates of all TAP shall be estimated. Toxic emissions were estimated using emission factors. This analysis is presented in Section 4.

210.03. Quantification of Ambient Concentrations

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Skim Fluid-Bed (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed (P104)

5.) Permeate Powder Receiver (P105)
6.) Boiler #1 (P106)
7.) Boiler #2 (P107)
8.) Emergency Generator (P108)

Ambient concentrations at appropriate receptor sites were estimated as described in Section 7.

210.04. Preconstruction Compliance Demonstration

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Skim Fluid-Bed (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed (P104)
5.) Permeate Powder Receiver (P105)
6.) Boiler #1 (P106)
7.) Boiler #2 (P107)
8.) Emergency Generator (P108)

Preconstruction compliance for each identified TAP is demonstrated by the modeling described in Section 7. Where appropriate, the limitations on potential to emit (PTE) described in Section 4 were included in this analysis.

213 - PRE-PERMIT CONSTRUCTION

213.01. Pre-Permit Construction Eligibility

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Skim Fluid-Bed (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed (P104)
5.) Permeate Powder Receiver (P105)
6.) Boiler #1 (P106)
7.) Boiler #2 (P107)
8.) Emergency Generator (P108)

213.01(a): The owner or operator shall apply for a permit to construct.

This application is submitted to satisfy this requirement.

213.01(b): The owner or operator shall consult with Department representatives prior to submitting a pre-permit construction approval application.

This requirement was satisfied by meeting with Mr. William Rogers, Mr. Darrin Mehr, and Mr. Morrie Lewis on October 16, 2007.

213.01(c): *The owner or operator shall submit a pre-permit construction approval application which must contain, but not be limited to: a letter requesting the ability to construct before obtaining the required permit to construct, a copy of the notice referenced in Subsection 213.02; proof of eligibility; process description(s); equipment list(s); proposed emission limits and modeled ambient concentrations for all regulated air pollutants, such that they demonstrate compliance with all applicable air quality rules and regulations. The models shall be conducted in accordance with Subsection 202.02 and with written Department approved protocol and submitted with sufficient detail so that modeling can be duplicated by the Department.*

These required elements are included in this application package.

213.01(d): *Owners or operators seeking limitations on a source's potential to emit such that permitted emissions will be either below major source levels or below a significant increase must describe in detail in the pre-permit construction application the proposed restrictions and certify in accordance with Section 123 that they will comply with the restrictions, including any applicable monitoring and reporting requirements. The required description of PTE limitations is included in Section 4.*

The required certification is included in the cover letter accompanying this application.

213.02. Permit To Construct Procedures For Pre-Permit Construction
Within ten (10) days after the submittal of the pre-permit construction approval application, the owner or operator shall hold an informational meeting in at least one (1) location in the region in which the stationary source or facility is to be located. The informational meeting shall be made known by notice published at least ten (10) days before the meeting in a newspaper of general circulation in the county(ies) in which the stationary source or facility is to be located. A copy of such notice shall be included in the application.

The required public meeting will be held on October 25, 2007. A copy of the required notice is included in Appendix 2.

214. DEMONSTATION OF PRECONSTRUCTION COMPLIANCE FOR NEW AND RECONSTRUCTED MAJOR SOURCES OF HAZARDOUS AIR POLLUTANTS

The proposed emission sources are not considered Major Facilities so this section does not apply.

220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS

222. CATEGORY II EXEMPTION

Affected emission units:
1.) Emergency Generator (P108)

The emergency generator at the facility qualifies for a Category II Exemption (IDAPA 58.01.01.222.d) since it will only combust natural gas or diesel fuel and it will be operated for less than 500 hours per year.

223. EXEMPTION CRITERIA AND REPORTING REQUIREMENTS FOR TOXIC AIR POLLUTANT EMISSIONS.

Not applicable as no exemptions are being claimed.

577. AMBIENT AIR QUALITY STANDARDS FOR SPECIFIC AIR POLLUTANTS.

Compliance with all applicable ambient air quality standards is discussed in Section 7.

578. DESIGNATION OF ATTAINMENT, UNCLASSIFIABLE, AND NONATTAINMENT AREAS.

Not applicable to applicant - designation of attainment, unclassifiable, and nonattainment areas is the responsibility of IDEQ. Current attainment status of the facility location is discussed in Section 5.

585. TOXIC AIR POLLUTANTS NON-CARCINOGENIC INCREMENTS.

Compliance with AACs is addressed in Sections 4 and 7.

586. TOXIC AIR POLLUTANTS CARCINOGENIC INCREMENTS.

Compliance with AACCs is addressed in Sections 4 and 7.

590. NEW SOURCE PERFORMANCE STANDARDS.

Affected Units:
1.) Boiler #1 (P106)
2.) Boiler #2 (P107)
3.) Emergency Generator (P108)

Compliance with NSPS is discussed in Section 3.1.

591. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS.

Compliance with NESHAPs is discussed in Section 3.1.

625. VISIBLE EMISSIONS.

Affected Units:
1.) Skim Milk Dryer Burner (P101A and P101B)
2.) Skim Fluid-Bed (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed (P104)
5.) Permeate Powder Receiver (P105)
6.) Boiler #1 (P106)
7.) Boiler #2 (P107)
8.) Emergency Generator (P108)

A person shall not discharge any air pollutant into the atmosphere from any point of emission for a period or periods aggregating more than three (3) minutes in any sixty (60) minute period which is greater than twenty percent (20%) opacity as determined by this section.

This requirement is applicable to all emission units listed above.

650. RULES FOR CONTROL OF FUGITIVE DUST.
All reasonable precautions shall be taken to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions which might affect the movement of particulate matter. Some of the reasonable precautions may include, but are not limited to, the following:
01. Use Of Water Or Chemicals. Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
02. Application Of Dust Suppressants. Application, where practical, of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust.
03. Use Of Control Equipment. Installation and use, where practical, of hoods, fans and fabric filters or equivalent systems to enclose and vent the handling of dusty materials.
04. Covering Of Trucks. Covering, when practical, open bodied trucks transporting materials likely to give rise to airborne dusts.
05. Paving. Paving of roadways and their maintenance in a clean condition, where practical. Note: all truck traffic areas will be paved.

675. FUEL BURNING EQUIPMENT -- PARTICULATE MATTER.
And
676. STANDARDS FOR NEW SOURCES.
And
677. STANDARDS FOR MINOR AND EXISTING SOURCES.

Affected units:
1.) Boiler #1 (P106)
2.) Boiler #2 (P107)

Compliance with particulate matter emission limits is discussed in Section 4 and/or Appendix 1.

700. PARTICULATE MATTER -- PROCESS WEIGHT LIMITATIONS.
And
710. PARTICULATE MATTER -- PROCESS EQUIPMENT EMISSION LIMITATIONS ON OR AFTER JULY 1, 2000.

Affected Units:
1.) Skim Milk Dryer Burner Baghouses (P101A and P101B)
2.) Skim Fluid-Bed Baghouse (P102)
3.) Permeate Dryer (P103)
4.) Permeate Fluid-Bed Baghouse (P104)
5.) Permeate Powder Receiver Baghouse (P105)

The maximum raw product input to these processes is 3.0 million pounds of raw milk per day. Based on the equation included in this section, the maximum allowable emission rate from each source is 20.68 lb/hr. Section 4 and Appendix 1 demonstrates compliance with this rule.

775. RULES FOR CONTROL OF ODORS.
And
776. GENERAL RULES.

No emission of odorous gases, liquids or solids into the atmosphere in such quantities as to cause air pollution will be allowed.

Section 4 – Emission Estimates

4.0 Potential to Emit/Emission Estimates/Limitation on Potential to Emit

4.1 Emission Estimates

Emission estimates are summarized in Table 4-1. Specific discussion regarding potential to emit for each source is presented in the following sections.

4.1.1 Skim Milk and Permeate Drying

Particulate matter emission rates for the Skim Milk Dryer (P101) and Permeate Dryer (P103) were calculated based on information provided by the supplier, C/E/Rogers. Particulate capture efficiencies were considered for the baghouses prior to discharge from P101 and the scrubber prior to discharge from P103 when calculating emission rates. Emission factors for carbon monoxide (CO) and nitrogen oxides (NO_x) were obtained from Maxon Corporation, the manufacturer of the burners used to provide heat for the dryers. Emission factors for sulfur dioxide (SO_2), volatile organic compounds (VOC), and toxic air pollutant emission rates were based on EPA AP-42, Chapter 1.4 "Natural Gas Combustion". Calculated emission rates for the dryer are included in Appendix 1.

4.1.2 Fluid-beds

Particulate emissions from the Skim Milk Fluid-Bed (P102) and the Permeate Fluid-Bed (P104) were calculated based on information provided by the supplier, C/E/Rogers. The particulate capture efficiency of the baghouse following each fluid-bed was considered when calculating the emission rate from these process units. Calculated emission rates for the fluid-beds are included in Appendix 1.

4.1.3 Permeate Powder Receiver

Particulate emissions from the Permeate Powder Receiver (P105) were calculated based on information provided by the supplier, C/E/Rogers. The particulate capture efficiency of the baghouse was considered when calculating the emission rate from this process unit. Calculated emission rates for the permeate powder receiver operations are included in Appendix 1.

4.1.4 Boilers

Emissions from the Boilers (P106 and P107) were estimated using AP-42 emission factors (AP-42, Chapter 1.4 "Natural Gas Combustion"). The two boilers will only combust natural gas. Since the boilers are fully redundant, emission calculations assumed only one boiler will be in operation at any one time. Emission calculations are included in Appendix 1.

4.1.5 Emergency Generator

Emission factors provided by the emergency generator (P108) equipment manufacturer (Cummins) were used for calculation of PM, SOx, CO, and NOx emission rates. The vendor supplied emission factors were provided for a variety of loading conditions, for purposes of this permit application the worst case emission

factor was utilized. Emission factors from AP-42 emission factors (Chapter 3.4, "Large Stationary Diesel and All Stationary Duel-fuel Engines") were used to calculate emissions of TAPs. The total emission rates on a ton per year basis were calculated assuming 500 hours of operation. Emission calculations are included in Appendix 1.

Table 4-1
Summary of Potential Emission Rates

Emission Inventory
Idaho Milk Products
Jerome, Idaho

Pollutant	Milk Dryer P101A & P101B		Skim Fluid-Bed P102		Permeate Dryer P103		Permeate Fluid-Bed P104		Permeate Powder Receiver baghouse P105		Boilers P106 & P107		Emergency Generator[(a)] P108		Total	EL	Total
	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(lb/hr)	(ton/yr)
PM_{10}	7.896	34.6	0.78	3.4	7.01	30.68	1.97	8.6	0.047	0.20	0.25	1.1	0.62	0.2	18.6		78.7
SO_2	0.024	0.1			0.007	0.0					0.02	0.1	0.36	0.1	0.4		0.3
NO_x	1.8	8.0			0.6	2.4					3.28	14.4	0.97	4.3	6.6		29.1
CO	14.9	65.2			4.5	19.6					2.76	12.1	2.2	0.5	24.3		97.4
VOC	0.22	0.9			0.06	0.3					0.18	0.8			0.5		2.0
Lead	2.0E-05	8.6E-05			5.9E-06	2.6E-05					1.6E-05	7.2E-05			4.2E-05		1.8E-04
Acetaldehyde													2.3E-04	5.8E-05	1.3E-05	3.0E-03	5.8E-05
Acrolein													7.3E-05	1.8E-05	7.3E-05	1.7E-02	1.8E-05
Arsenic	7.8E-06	3.0E-05			2.4E-06	9.0E-06					6.6E-06	2.5E-05			1.7E-05	1.5E-06	6.4E-05
Benzene	6.7E-05	2.6E-04			6.7E-05	2.6E-04					1.3E-04	5.0E-04	7.2E-03	1.8E-03	6.7E-04	8.0E-04	2.8E-03
Benzo(a)pyrene	3.8E-08	1.5E-07			3.8E-08	1.5E-07					7.4E-08	2.8E-07	2.4E-06	5.9E-07	2.9E-07	2.0E-06	1.2E-06
Cadmium	4.3E-05	1.7E-04			1.3E-05	5.0E-05					3.6E-05	1.4E-04			9.2E-05	3.7E-06	3.5E-04
Fluorene	8.9E-08	3.4E-07			8.9E-08	3.4E-07					1.7E-07	6.6E-07	1.2E-04	3.0E-05	1.2E-04	1.3E-01	3.1E-05
Formaldehyde	2.9E-03	1.1E-02			8.8E-04	3.4E-03					2.5E-03	9.4E-03	7.3E-04	1.8E-04	6.3E-03	5.1E-04	2.4E-02
Naphthalene	1.9E-05	7.4E-05			1.9E-05	7.4E-05					3.8E-05	1.4E-04	1.2E-03	3.0E-04	1.4E-04	3.3E+00	5.9E-04
Nickel	8.2E-05	3.2E-04			2.5E-05	9.5E-05					6.9E-05	2.6E-04			1.8E-04	2.7E-05	6.7E-04
Toluene	1.1E-04	4.2E-04			1.1E-04	4.2E-04					2.1E-04	8.0E-04	2.6E-03	6.5E-04	3.0E-03	2.5E+01	2.3E-03
Total PAH													2.0E-03	4.9E-04	1.1E-04	9.1E-05	4.9E-04
Xylenes													1.8E-03	4.5E-04	1.8E-03	2.9E+01	4.5E-04

Notes:
(a) The ton/yr emission rates from the generator for all pollutants were based on 500 hr/yr operation. The lb/hr emission rates from the generator were reduced by a ratio of 500 hr / 8760 hr for pollutants with only an annual average compliance limit (NOx and carcinogenic TAPs).

4.2 Process Weight Rule

The Process Weight Rule (IDAPA 58.01.01.700) applies to the milk processing operations at this plant. This rule limits the amount of particulate matter (PM) that can be discharged from a source. Appendix 1 includes an estimate of PM emissions from process equipment (excluding emissions from fuel combustion equipment) and summarizes the calculation of the allowable PM discharge according to the Process Weight Rule.

According to the Process Weight Rule analysis summarized in Appendix 1, the facility at its capacity of 3.0 million pounds per day of raw milk is allowed to discharge 20.68 pounds PM per hour from process equipment (excludes fuel burning equipment). The facility is only anticipated to generate 17.31 pounds PM per hour; therefore, the anticipated PM loading from the facility will meet requirements of the process weight rule.

4.3 Limitations on Potential to Emit

Natural gas combustion must be limited in the boilers (P106 and P107) to a maximum of 287.5 million scf/yr to prevent exceedance of the major classification for CO. The emergency generator will be limited to 500 hours of operation per year to maintain its exempt status. The only controls that must be maintained at the proposed facility are the baghouses that collect particulate from drying processes at P101, the scrubber that collects particulate from drying processes at P103, the fluid-bed baghouses (P102 and P104), and the powder handling baghouse (P105). The facility is considered a synthetic minor source since it relies on limitations in operation and on physical controls to prevent exceedance of the major source classification.

Section 5 – Facility Classification

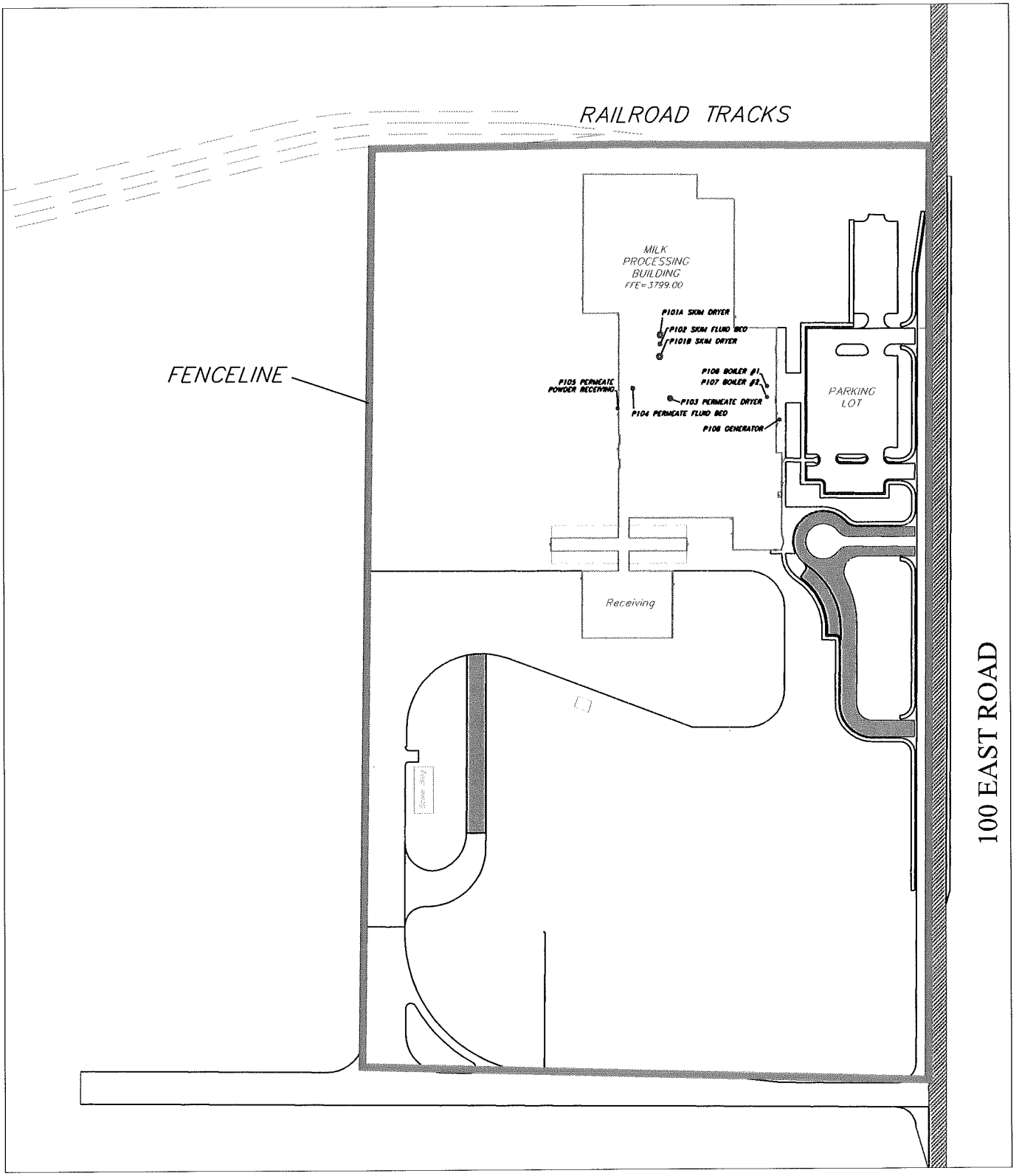
5.0 Facility Classification

The IMP Plant is to be located in Jerome, Idaho. This area is considered attainment or unclassified for all criteria pollutants.

The facility is not a designated facility as defined in IDAPA 58.01.01.006.26. The facility is not a major facility as defined IDAPA 58.01.01.008.10. The proposed modification is not a major modification defined in IDAPA 58.01.01.006.55. The primary SIC Code for the facility is 2023 and the NAICS code is 311514.

There are no Class I areas within 10 km of the facility. PSD is not applicable as discussed in Section 3. Emission inventories are presented in Section 4.

Section 6 - Plot Plan



0 100 200 300
(Scale in Feet)

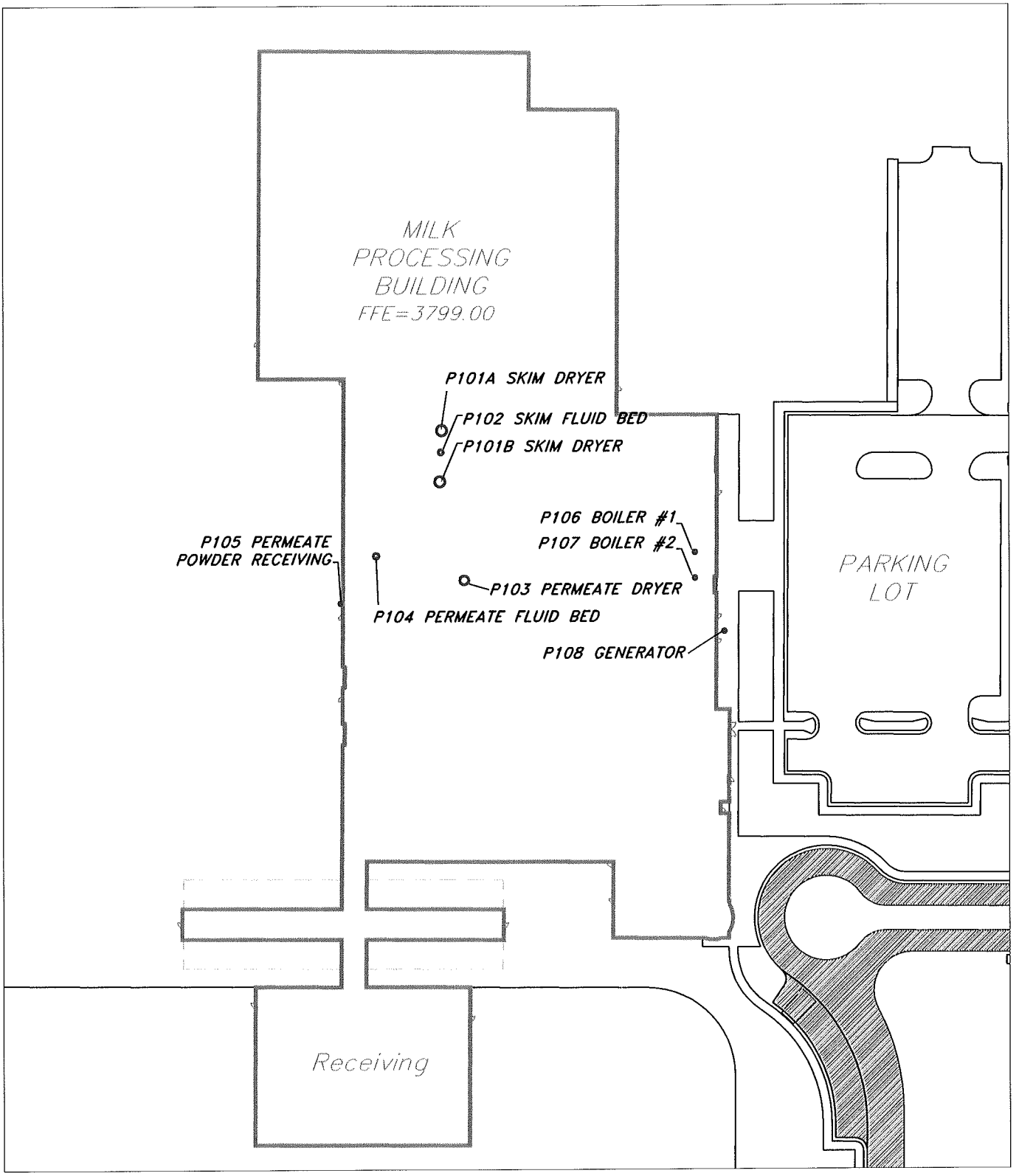
MSE Millennium Science & Engineering, Inc.
1605 North 13th Street
Boise, ID 83702
(208) 345-8292 (phone)
(208) 344-8007 (fax)

Site Map with Fenceline Location

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 3



0 25 50 100
(Scale in Feet)

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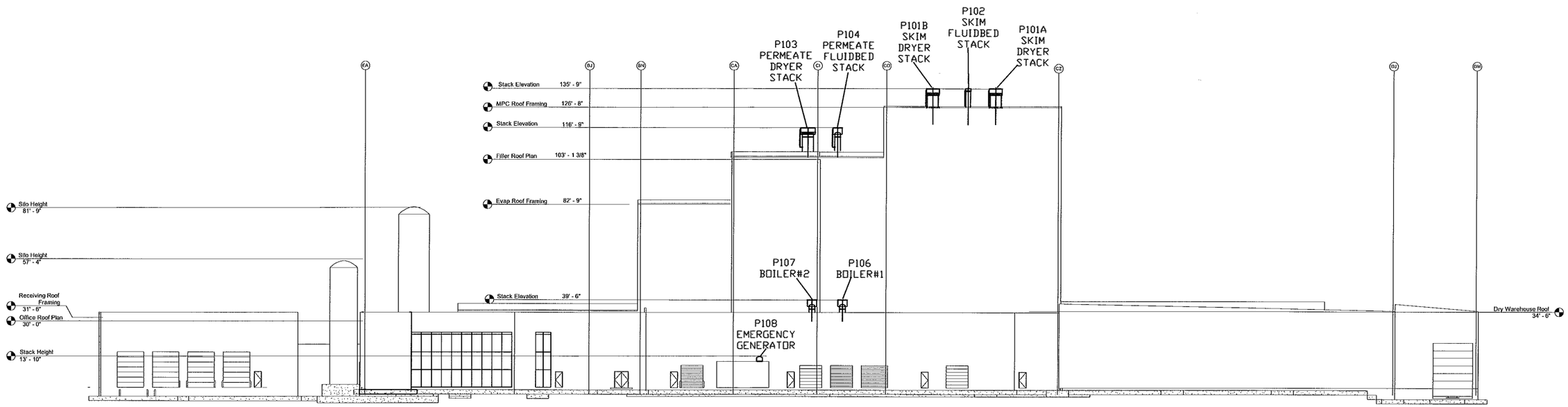
1605 North 13th Street
Boise, ID 83702
(208) 345-8292 (phone)
(208) 344-8007 (fax)

Building Plan View and Emission Point Locations

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 4



MSE Millennium Science & Engineering, Inc.

1605 North 13th Street
Boise, ID 83702
(208) 345-8292 (phone)
(208) 344-8007 (fax)

East Elevation View

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 5

Section 7 – Ambient Impact Assessment

7.0 Ambient Impact Assessment

Air dispersion modeling was performed to demonstrate compliance with NAAQS for criteria pollutants and Idaho Department of Environmental Quality (IDEQ) screening levels for TAPs in support of this Pre-Permit Construction and PTC Application for the IMP facility. Modeling was performed according to the Modeling Protocol submitted to the IDEQ on October 5, 2007 (see Appendix 3 for a copy of the modeling protocol and the IDEQ approval letter).

7.1 Model Description / Justification

Air dispersion modeling was performed using the Environmental Protection Agency (EPA) AERMOD model (version 07026). Building downwash was accounted for in the model. Building and tank dimensions were entered into the Building Parameter Input Program to calculate appropriate building profiles to import into AERMOD. Model output printouts are included in Appendix 4 and input/output files are included as electronic files on an enclosed compact disc.

7.2 Emission and Source Data

Nine point sources were modeled. The nine point sources included discharges from five baghouses, one dryer scrubber, two boilers, and one emergency generator. Three criteria pollutants (PM_{10}, NOx, and CO) were modeled from these sources (emission rates for SOx and lead were below the modeling thresholds listed in Table 1 of the State of Idaho Air Quality Modeling Guidelines). The estimated emission rates for the toxic air pollutants (TAPs): arsenic, cadmium, formaldehyde, and nickel that result from the combustion of natural gas in the dryer, emergency generator, and boilers exceeded the Emission Screening Limits (EL) and were therefore modeled. Although estimated emissions of PAHs exceeded the applicable EL, PAHs were not modeled because the emission factor used to estimate PAH emissions was a "less than value" and because the estimated emissions using this questionable emission factor only exceeded the EL by a small margin. Table 7-1 summarizes the emission source characteristics used in the ambient impact analysis. All modeling was performed using the maximum potential to emit.

Modeling was performed in two passes, in the first pass we assumed 100% of the skim milk dryer emissions discharged through each baghouse stack. We found this scenario passed for all pollutants except PM_{10}. We reran the model for PM_{10} with one of the two stacks not emitting from the P101 skim milk dryer (i.e. P101A emitting full emission rate while P101B not emitting and vice versa). This scenario passed. For conservatism, and to save time, we did not rerun the model for the other pollutants with the emission rates split between the two stacks since the modeling worked at the higher rates.

Table 7-1
Emission Source Characteristics

Emission Source	Stack ID	Stack Height (ft)	Stack Diam. (ft)	Exhaust Temp. (°F)	Stack Gas Vel. (m/s)	Emission Rates (g/s)						
						PM_{10}	NOx	CO	As	Cd	Formald -ehyde	Ni
Skim Milk Dryer Baghouse #1	P101A	135.75	5.75	190	12.42	0.995(3)	0.226	1.877	8.63E-7	4.89E-6	3.16E-4	9.21E-6
Skim Milk Dryer Baghouse #2	P101B	135.75	5.75	190	12.42	0.995(3)	0.226	1.877	8.63E-7	4.89E-6	3.16E-4	9.21E-6
Skim Fluid-Bed Baghouse	P102	135.75	2.5	130	9.40	0.098	--	--	--	--	--	--
Permeate Dryer Scrubber	P103	116.75	6.5	112	8.03	0.883	0.076	0.566	2.59E-7	1.44E-6	9.78E-5	2.73E-6
Permeate Fluid-Bed Baghouse	P104	116.75	4.167	130	10.94	0.248	--	--	--	--	--	--
Permeate Powder Receiver Baghouse	P105	43.08	(1)	(1)	(1)	0.0059	--	--	--	--	--	--
Boiler#1	P106	39.5	4.083	350	4.03	0.0315	0.413	0.347	7.19E-7	4.03E-6	2.70E-4	7.48E-6
Boiler#2	P107	39.5	4.083	350	4.03	0.0315	0.413	0.347	7.19E-7	4.03E-6	2.70E-4	7.48E-6
Emergency Generator	P108	13.8	2.67	500 (2)	3.08	0.0782	0.123	0.277	--	--	5.18E-6	--

Notes:

(1) Stack gas velocity set to 0.001 m/s and diameter set to 0.001 m due to the stack's horizontal discharge orientation. The exhaust temperature was assumed to be ambient (default to 0 K) for modeling purposes.

(2) The discharge temperature for the generator exhaust was reduced from 873 °F to 500 °F to account for heat losses from the exhaust manifold to discharge elevation.

(3) Modeling was performed in two passes, in the first pass we assumed 100% of the skim milk dryer emissions discharged through each baghouse stack. We found this scenario passed for all pollutants except PM10. We reran the model for PM10 with one stack not emitting for dryer emissions (i.e. P101A emitting full emission rate while P101B not emitting and vice versa). This scenario passed. We did not rerun the pollutants at the lower rates since those pollutants passed at the higher rates (more conservative).

7.3 Receptor Network

A receptor network was established so that ambient concentrations could be evaluated. The first step in this process was to determine the location of the ambient air boundary and the second step was to assign receptor locations within the ambient air zone.

7.3.1 Ambient Air Boundary

The ambient air boundary was established as the facility's fenceline. See Figure 3 – Site Map with Fenceline Location (Section 6), for location of the fenceline.

7.3.2 Receptors

Receptors were established to determine maximum ambient air concentrations. A receptor grid with approximately 100 meter spacing was established across the entire evaluated area. Within 300 meters of the ambient air boundary, receptors were established every 25 meters. Along the facility's fenceline, receptors were established every 10 meters. No receptors were established within the facility's controlled property boundary (ambient air boundary).

7.4 Elevation Data

Topography data for the site was obtained from the USGS as a 7.5 minute digital elevation model (DEM). AERMAP was used to pre-process this data for use in AERMOD.

7.5 Meteorological Data

Preprocessed meteorological data (surface and upper air) from the Boise airport was provided by the IDEQ. This data was processed by IDEQ using AERMET; the output files provided by the IDEQ were used as inputs to the AERMOD model for this site. Because this input data may not be representative of actual surface characteristics or meteorological conditions at the proposed plant location, an adjustment factor of twenty percent (20%) was applied to model results prior to adding in background concentrations.

7.6 Land Use Classification

The facility is industrial while the surrounding land is a mix of open space/agricultural and industrial land uses. The Air dispersion modeling was performed using a "rural" classification.

7.7 Surface Characteristics

Surface characteristics of the meteorological monitoring station were evaluated and incorporated into the AERMET processing performed by the IDEQ. These surface characteristics may not be representative for the IMP site but a safety factor of 20 percent was applied to model results to accommodate for the difference in surface and meteorological characteristics (as discussed in Section 7.5).

7.8 Background Concentrations

Table 7-2 summarizes the criteria pollutant background concentrations. Criteria pollutant background concentrations for small town/suburban areas were provided by Darrin Mehr of the IDEQ.

7.9 Evaluation of Compliance With Standards

As discussed in Section 7.5, a model output adjustment factor of 20% was applied to the modeling results to account for variations in surface characteristics between the meteorological monitoring station and the IMP site. To determine compliance with NAAQS, the applicable background concentrations were added to the adjusted maximum predicted ambient concentrations determined from air dispersion modeling to result in total ambient concentrations. These total ambient air concentrations were compared to the NAAQS. Table 7-2 summarizes the air dispersion modeling results and compares the total predicted ambient air concentration to the applicable NAAQS. See Appendix 4 for graphical output from air dispersion modeling. Based on this evaluation, no NAAQS are predicted to be exceeded by emissions from the sources, if operated and configured as proposed in this application.

Table 7-2
Results of Ambient Impact Assessment for Criteria Pollutants
(All Concentrations in Units of $\mu g/m^3$)

Pollutant	Averaging Period	Maximum Air Dispersion Model Output	Output Adjustment Factor	Adjusted Output	Compliance Demonstration		
					Background	Total	NAAQS
PM10	24 hr, 2nd high	52.42	1.2	63	81	144	150
	Annual	15.55	1.2	19	27	46	50
NOx	Annual	18.21	1.2	22	17	39	100
CO	1hr, 2nd high	407.3	1.2	489	3,600	4,089	40,000
	8hr, 2nd high	164.2	1.2	197	2,300	2,497	10,000

7.10 Evaluation of Ambient Impact Assessment for TAPs

The maximum model output values were adjusted using a factor of 1.2 and then compared to Acceptable Ambient Concentration for Carcinogens (AACC) values for each TAP. Table 7-3 summarizes the results of air dispersion modeling performed to evaluate the ambient impact for TAPs. None of the AACC were exceeded by any of the adjusted maximum predicted ambient air concentrations; therefore, the predicted ambient impact from TAP emissions is acceptable.

Table 7-3
Results of Ambient Impact Assessment for Toxic Air Pollutants
(All Concentrations in Units of $\mu g/m^3$)

Pollutant	Averaging Period	Maximum Air Dispersion Model Output	Output Adjustment Factor	Adjusted Output	Idaho AACC
Arsenic	Annual, 1st high	3.0E-5	1.2	3.6E-5	2.3E-4
Cadmium	Annual, 1st high	1.8E-4	1.2	2.2E-4	5.6E-4
Formaldehyde	Annual, 1st high	1.2E-2	1.2	1.4E-2	7.7E-2
Nickel	Annual, 1st high	3.3E-4	1.2	4.0E-4	4.2E-3